

Atty. Docket No. PIA31069/ANS
Serial No: 10/751,184

Amendments to the Claims

1. (Currently Amended) A method for etching a metal layer [on which] having an oxide-based antireflective coating (ARC) layer thereon [is coated in a semiconductor device] comprising the steps of:

[performing a dry cleaning process by using a Cl_2/CHF_3 based gas, after] dry cleaning the ARC layer [by using] with an oxide-based gas; and
etching at least part of the metal layer with a gas mixture comprising Cl_2 and CHF_3 .

2. (Currently Amended) The method of claim 1, wherein a flow rate of the Cl_2 [based gas] ranges from about 100 sccm to about 200 sccm.

3. (Currently Amended) The method of claim 1, wherein a flow rate of the CHF_3 [based gas] ranges from about 5 sccm to about 30 sccm.

4. (Currently Amended) The method of claim 1, wherein a pressure of each of the dry cleaning [process] and etching steps ranges from about 8 mTorr to about 50 mTorr.

5. (Currently Amended) The method of claim 1, wherein a source power of each of the dry cleaning [process] and etching steps ranges from about 500 W to about 1200 W.

6. (Currently Amended) The method of claim 1, wherein a bias power of each of the dry cleaning [process] and etching steps ranges from about 0 W to about 10 W.

7. (Currently Amended) The method of claim 1, wherein the [dry cleaning process] method is performed for about 5 seconds to about 30 seconds.

8. (New) The method of claim 1, wherein the oxide-based gas comprises oxygen.

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9. (New) The method of claim 1, wherein the dry cleaning and etching steps are performed sequentially in a single etching chamber.

10. (New) The method of claim 1, wherein the metal layer and ARC layer are on a wafer having a center area and an edge area, and the etching step decreases a microloading effect in the edge area.

11. (New) The method of claim 11, wherein the metal layer is etched at a rate that is substantially the same in the center area and the edge area.

12. (New) The method of claim 1, wherein the etching step (i) is performed in a chamber and (ii) further eliminates polymers deposited in the chamber.

13. (New) The method of claim 1, wherein the etching step further eliminates aluminum- and silicon-containing byproducts.

14. (New) The method of claim 1, wherein the metal layer comprises an aluminum layer.

15. (New) The method of claim 14, wherein the metal layer further comprises a titanium nitride layer under the aluminum layer.

16. (New) The method of claim 1, wherein the ARC layer comprises a silicon oxide.

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Support for the Amendments

Support for the above amendments can be found throughout the specification, claims and Figures as originally filed on December 30, 2003. No new matter is introduced by the present Amendment. Without intending to be limited to the cited support, exemplary support for amendments to specific claims, as well as for new claims, follows.

Support for the amendment(s) to claim 1 can be found in the originally filed application on page 1, lines 20-22; page 3, lines 7-13; page 4, lines 5-8 and 18-21; page 5, Table 1; page 6, lines 13-16; claim 1 as originally filed; and in Figures 2A-2B. Support for the amendments to claims 4-6 can be found in the originally filed application on page 4, lines 5-8; and page 5, lines 3-4 and Table 1. Support for the amendment to claim 7 can be found in the originally filed application on page 4, lines 5-8; and page 5, lines 14-15. Support for new claim 8 can be found in the originally filed application on page 5, Table 1. Support for new claim 9 can be found in the originally filed application on page 1, lines 23-26; page 3, lines 7-13; page 5, lines 3-15 and Table 1; and in Figures 2A-2B. Support for new claim 10 can be found in the originally filed application on page 3, lines 7-13; page 5, lines 16-20; and page 6, lines 1-2. Support for new claim 11 can be found in the support for new claim 10 and elsewhere in the originally filed application on page 6, lines 8-12. Support for new claim 12 can be found in the originally filed application on page 3, lines 7-13. Support for new claim 13 can be found in the originally filed application on page 2, lines 8-10; page 3, lines 7-13; and page 5, lines 9-13. Support for new claim 14 can be found in the originally filed application on page 2, lines 11-13; page 4, line 26; page 5, lines 1-2 and 9-13; page 6, lines 13-16; and in Figures 1A-2B. Support for new claim 15 can be found in the support for new claim 14 and elsewhere in the originally filed application on page 2, lines 18-20. Support for new claim 16 can be found in the originally filed application on page 1, lines 20-22; page 2, lines 8-10; page 3, lines 7-13; and page 5, lines 9-13. Thus, the present Amendment introduces no new matter.